

Notice of Allowability

Application No.

09/919,740

Examiner

Paul Dinh

Applicant(s)

ELASSAAD ET AL.

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the after final amendment filed on 10/11/05.
2. ☒ The allowed claim(s) is/are 2,3,6-14,16-19,27-31, and 33-35.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date same as this notice
7. ☒ Examiner's Amendment/Comment of allowability
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Paul Dinh

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John W. carpenter on 10/17/05.

The application has been amended as follows:

In the claims

1. The non-elected-withdrawn claim 20-26 have been cancelled.
2. In claim 6, line 13, after the word edge, insert - - said step of determining an optimal number of buffers comprises the step of, calculating, for each edge, the optimal number of buffers based on an optimal timing for the edge, a delay of the edge, and an impedance of the edge - -.
(To provide antecedent basis for "said step of calculating ..." in claim 6)
3. In claim 8, after the equation in claim 8, delete the limitation: "stage delay for each branch, comprising,"
In claim 8, line 22, after the terms comprise calculating a, insert - - stage delay for each branch, comprising: - -
(The above-mentioned limitation was re-position in the right place/line for clarity)

(The examiner amendment has been made in order to bring the application into a condition for allowance)

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

Claims 2-3, 6-14, 16-19, 27-31 and 33- 35 are allowed because the prior art of record does not teach or suggest methods of inserting buffer in a circuit design in the manner as recited in the claims; the methods having combinations of steps and elements including, among other things as recited in the claims; the following particular limitations:

(In claim 6) The step of step of calculating the optimal number of buffers with the equation and variables of the equation as recited in claim 6.

(In claims 8 and similarly recited claim 29) The step of determining a uniform load distribution comprises calculating a stage delay for each branch with the equation and variables of the equation as recited in claim 8.

(In claim 10 and similarly recited claim 31)

wherein said steps of determining a number of buffers and calculating a position of each buffer comprises:

identifying a driver of a net to have buffers inserted;

performing a breadth first search (BFS) of the net starting at the identified net driver and processing all connected edges;

performing a depth first search (DFS) starting at a next stage in the net; and

for each edge, determining a number of buffers to be inserted on each edge of nets of the global routing for boosting timing performance of the nets, and calculating a position for each buffer.

(In claim 27) The step of calculating the optimal number of buffers comprises calculating a capacitance C_x for each branch with the equation and variables of the equation as recited in claim 27

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is 571-272-1890. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul Dinh
Patent Examiner

A handwritten signature in black ink that reads "Paul Dinh". The signature is written in a cursive style with a long, sweeping underline that extends to the right.